



**FCC CFR47 PART 15 SUBPART C
CERTIFICATION**

TEST REPORT

FOR

BLUETOOTH PROTOCOL ANALYZER

MODEL NUMBER: BT006UAA-X

FCC ID: KH7BT006UAA-X

REPORT NUMBER: 03U2361-1

ISSUE DATE: DECEMBER 1, 2003

Prepared for
COMPUTER ACCESS TECHNOLOGY CORPORATION
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U.S.A.

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TABLE OF CONTENTS

1. TEST RESULT CERTIFICATION	3
2. EUT DESCRIPTION	4
3. TEST METHODOLOGY	5
4. FACILITIES AND ACCREDITATION	5
5. CALIBRATION AND UNCERTAINTY	6
5.1. <i>MEASURING INSTRUMENT CALIBRATION</i>	6
5.2. <i>MEASUREMENT UNCERTAINTY</i>	6
5.3. <i>TEST AND MEASUREMENT EQUIPMENT</i>	7
6. SETUP OF EQUIPMENT UNDER TEST.....	8
7. APPLICABLE LIMITS AND TEST RESULTS.....	10
7.1. <i>RADIATED EMISSIONS.....</i>	<i>10</i>
7.1.1. TRANSMITTER RADIATED SPURIOUS EMISSIONS	10
7.1.2. TRANSMITTER RADIATED EMISSIONS ABOVE 1 GHZ.....	13
7.1.3. WORST-CASE RADIATED EMISSIONS BELOW 1 GHZ.....	22
7.2. <i>POWERLINE CONDUCTED EMISSIONS.....</i>	<i>23</i>
8. SETUP PHOTOS.....	26

1. TEST RESULT CERTIFICATION

COMPANY NAME: COMPUTER ACCESS TECHNOLOGY CORPORATION
2403 WALSH AVENUE
SANTA CLARA, CA 95051
U.S.A.

EUT DESCRIPTION: BLUETOOTH PROTOCOL ANALYZER

MODEL: BT006UAA-X

DATE TESTED: 11/17/03 – 11/19/03

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 15 SUBPART C	NO NON-COMPLIANCE NOTED

Compliance Certification Services, Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: This document reports conditions under which testing was conducted and results of tests performed. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document.

Approved & Released For CCS By:


THU CHAN
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

Tested By:


FRANK IBRAHIM
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

2. EUT DESCRIPTION

The EUT is a Bluetooth Protocol Analyzer

The transmitter has a maximum peak conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2400 - 2483.5	Inquiry Mode	2.06	1.61

The radio utilizes an external dipole antenna with a maximum gain of 2.0 dBi.

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4/1992, FCC CFR 47 Part 2 and FCC CFR 47 Part 15.

4. FACILITIES AND ACCREDITATION

The open area test sites and conducted measurement facilities used to collect data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.



No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government.

5. CALIBRATION AND UNCERTAINTY

5.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

5.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Radiated Emission, 30 to 200 MHz	+/- 3.3 dB
Radiated Emission, 200 to 1000 MHz	+4.5 / -2.9 dB
Radiated Emission, 1000 to 2000 MHz	+4.5 / -2.9 dB
Power Line Conducted Emission	+/- 2.9 dB

Uncertainty figures are valid to a confidence level of 95%.

5.3. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment were utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
EMI Test Receiver	R & S	ESHS 20	827129/006	7/17/04
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	8379443	10/13/04
RF Preselector, 20 Hz ~ 2 GHz	HP	85685A	2817A00756	8/22/04
Line Filter	Lindgren	LMF-3489	497	CNR
AC Power Source, 10KVA	ACS	AFC-10K-AFC-2	J1568	CNR
Preamplifier, 1 ~ 26 GHz	Miteq	NSP10023988	646456	4/25/04
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	9001-3245	2/4/04
Spectrum Analyzer	HP	8593EM	3710A00205	10/1/04
Antenna, Bicon/Log, 25 ~ 2000 MHz	ARA	LPB-2520/A	1185	3/6/04
Quasi-Peak Adaptor	HP	85650A	2811A01155	8/22/04
Spectrum Analyzer 20Hz ~ 40MHz	HP	3585A	2504A05564	6/4/04
SA Display Section 2	HP	85662A	2816A16696	8/22/04
Preamplifier, 1300 MHz	HP	8447D	2944A06550	8/15/04

6. SETUP OF EQUIPMENT UNDER TEST

SUPPORT EQUIPMENT

TEST PERIPHERALS				
Device Type	Manufacturer	Model Number	Serial Number	FCC ID
PRINTER	HP	2225C	2541S41679	BS46XU2225C
MODEM	HAYES	336156K	9013539	IFAXDM1414
BREAKOUT PCB	CATC	MICRO MERLIN	PCA 210-0088	N/A
AC/DC ADAPTER	CUI	EPA-151DA-05	N/A	N/A
LAPTOP AC/DC ADAPTER	ACBEL POLYTECH INC.	API-7595	286449	DoC
LAPTOP	TOSHIBA	SATELLITE 1675 CDS	6037474CU	DoC
BLUETOOTH TEST GENERATOR	CATC	MERLIN'S WAND	16355E	DoC
BLUETOOTH TEST GENERATOR	CATC	MERLIN'S WAND	B-MWTG-A101	168706
PS/2 MOUSE	LOGITECH	M-CQ38	LZB71209044	DZLM04
KEY BOARD	HP	SK-2502	HR805273508	DoC
PC	N/A	A84663-001	229	N/A
MONITOR	ADI	CM700	94704FL20B02679B	DoC

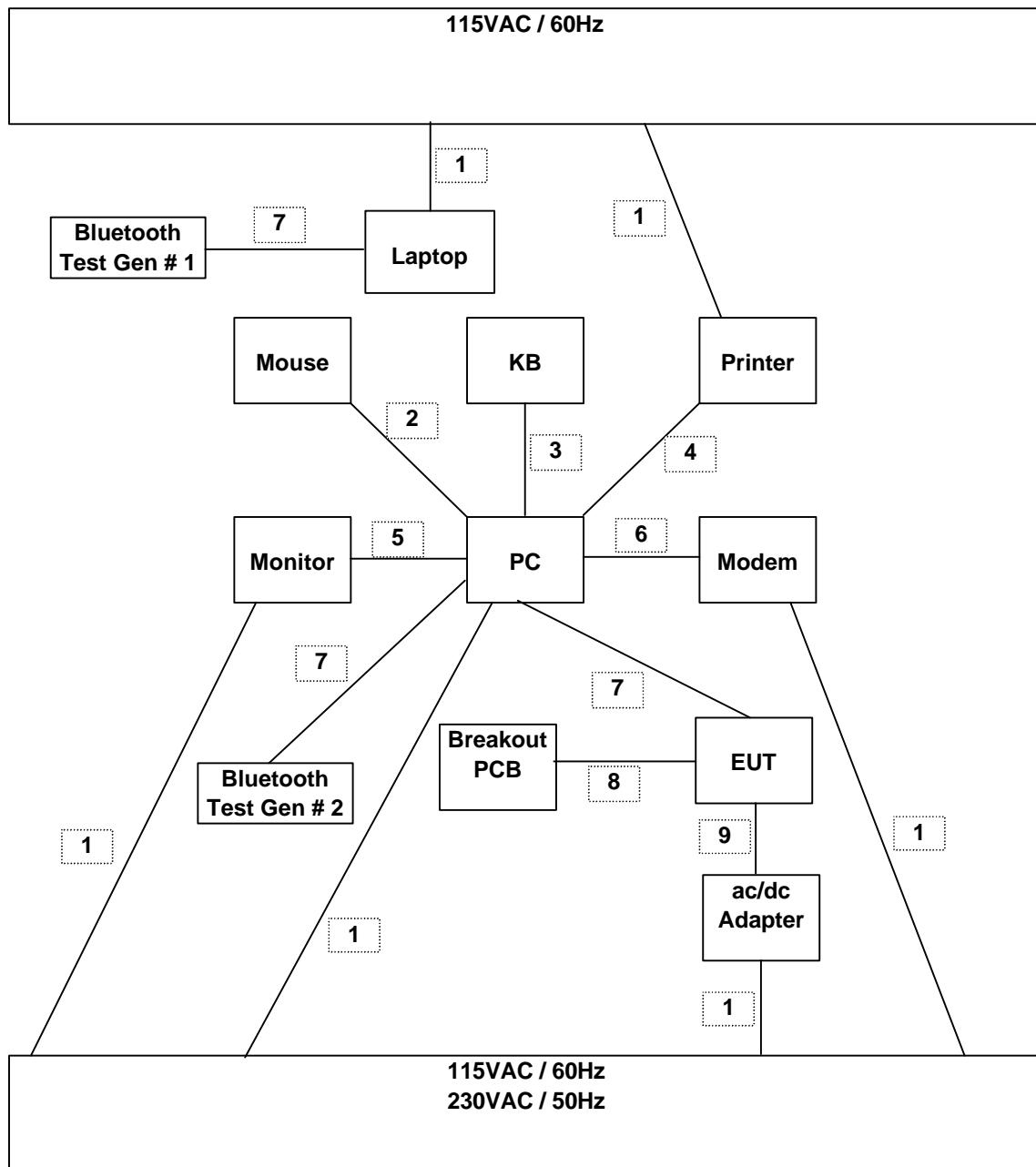
I/O CABLES

TEST I / O CABLES									
Cable No	I/O Port	# of I/O Port	Connector Type	Type of Cable	Cable Length	Data Traffic	Bundled	Remark	
1	AC	6	US 115V	Un-shielded	2m	No	No	N/A	
2	Mouse	1	PS/2	Un-shielded	2m	Yes	No	N/A	
3	KB	1	PS/2	Shielded	2m	Yes	No	N/A	
4	Parallel	1	DB25	Shielded	1.5m	Yes	Yes	N/A	
5	Video	1	DB15	Shielded	1m	Yes	No	N/A	
6	Serial	1	DB9	Shielded	1m	Yes	No	N/A	
7	USB	3	USB	Un-shielded	1m	Yes	No	N/A	
8	PCB Breakout	1	DIN	Un-shielded	30 cm	Yes	No	N/A	
9	DC	1	AC/DC	Un-shielded	1m	No	No	N/A	

TEST SETUP

The EUT is connected to a PC by a USB cable, the PC is connected to Bluetooth test generator, another Bluetooth test generator was connected to a laptop, the EUT was either transmitting or receiving depending on the applicable mode, operation is controlled by a custom-made software provided by the client.

SETUP DIAGRAM FOR TESTS



7. APPLICABLE LIMITS AND TEST RESULTS

7.1. RADIATED EMISSIONS

7.1.1. TRANSMITTER RADIATED SPURIOUS EMISSIONS

LIMITS

§15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41			

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

§15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

§15.209 (a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

§15.209 (b) In the emission table above, the tighter limit applies at the band edges.

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

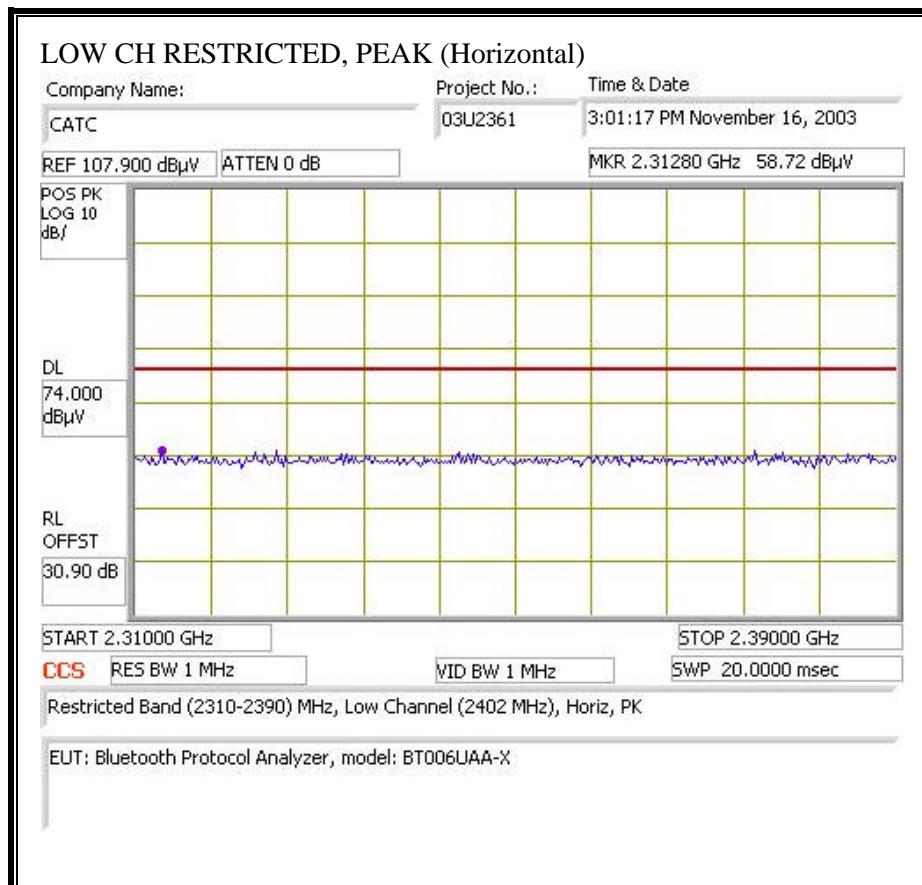
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

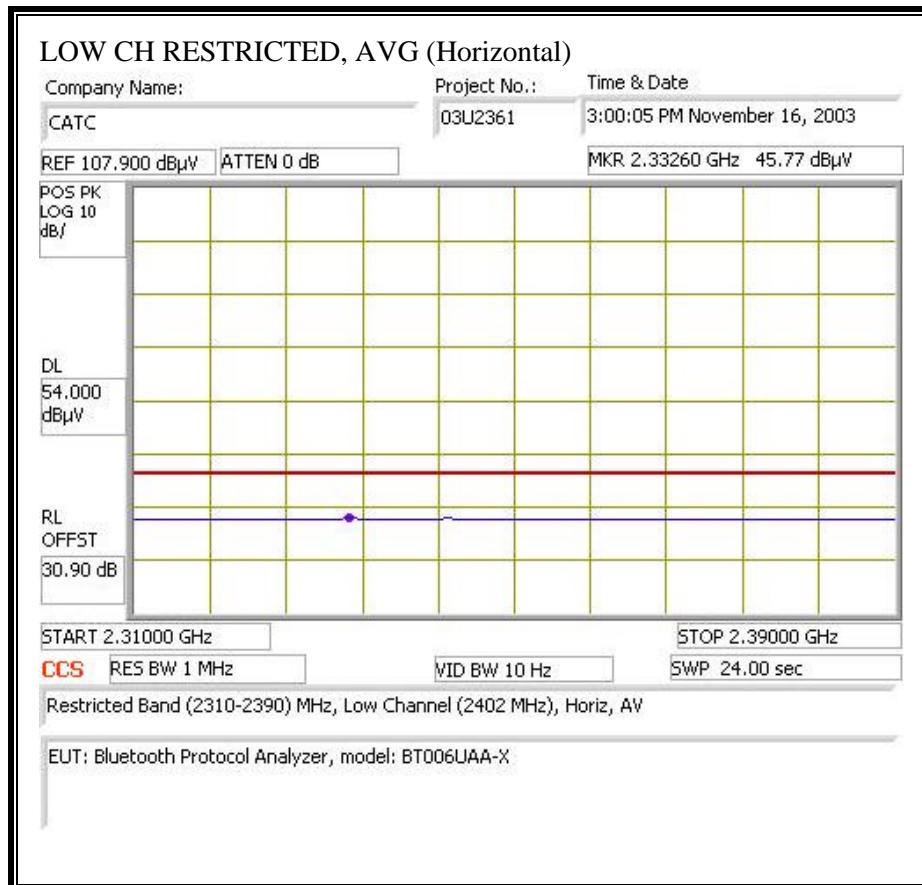
RESULTS

No non-compliance noted:

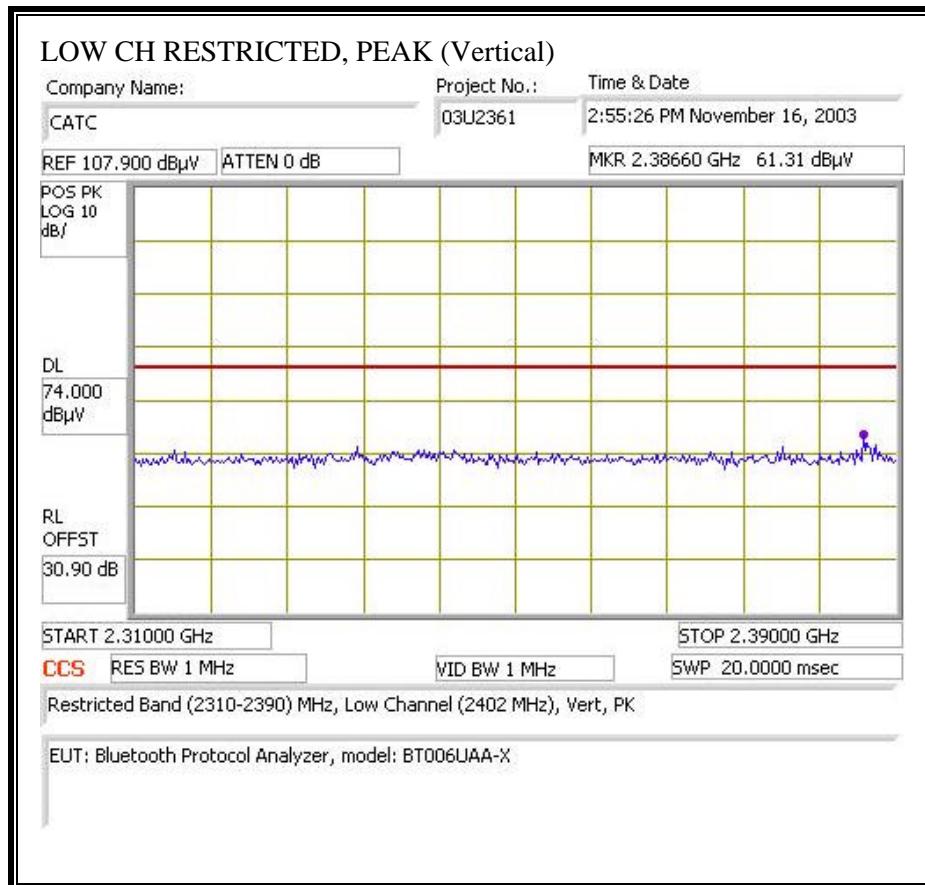
7.1.2. TRANSMITTER RADIATED EMISSIONS ABOVE 1 GHZ

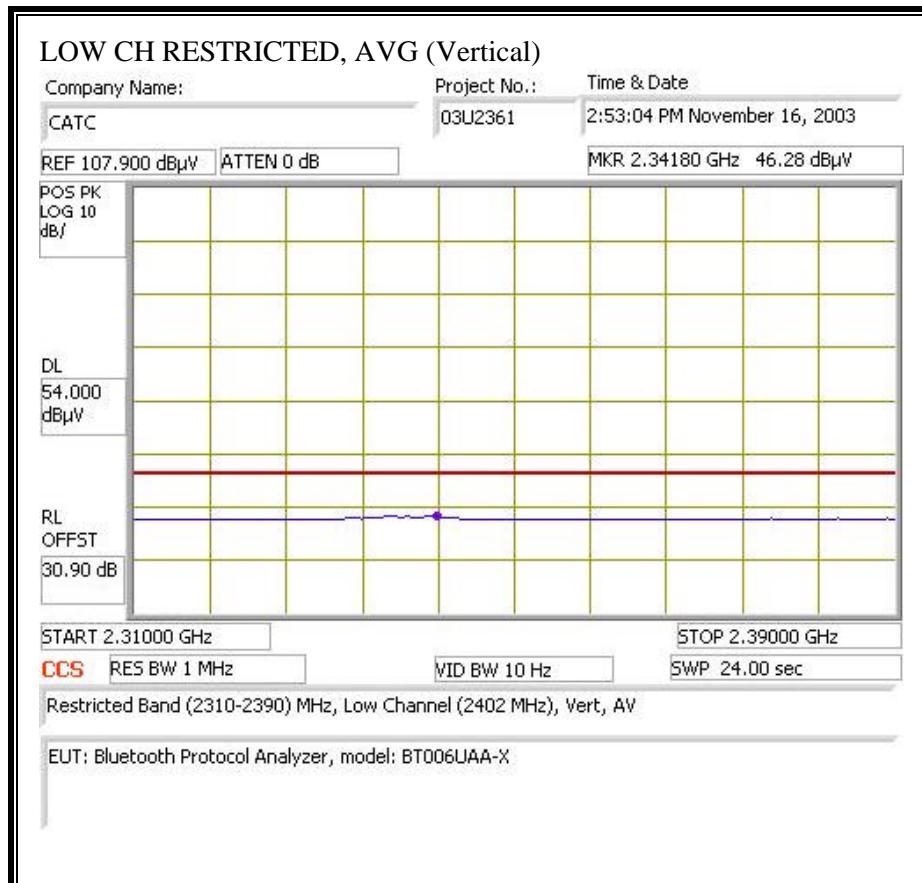
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

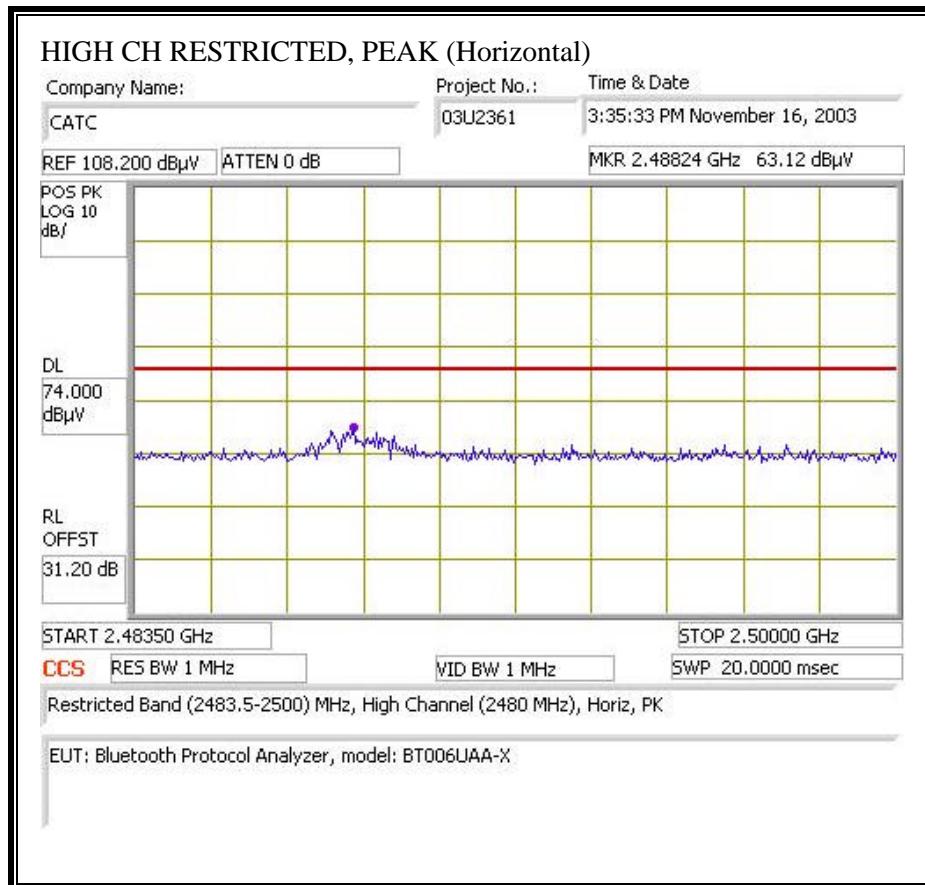


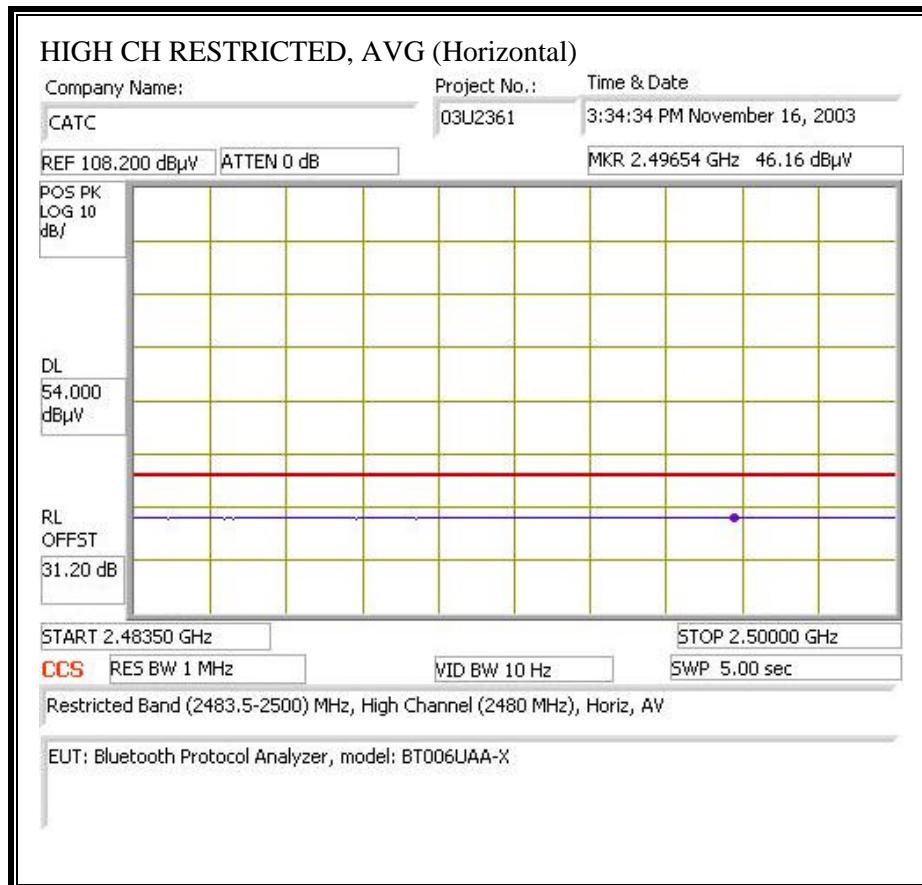


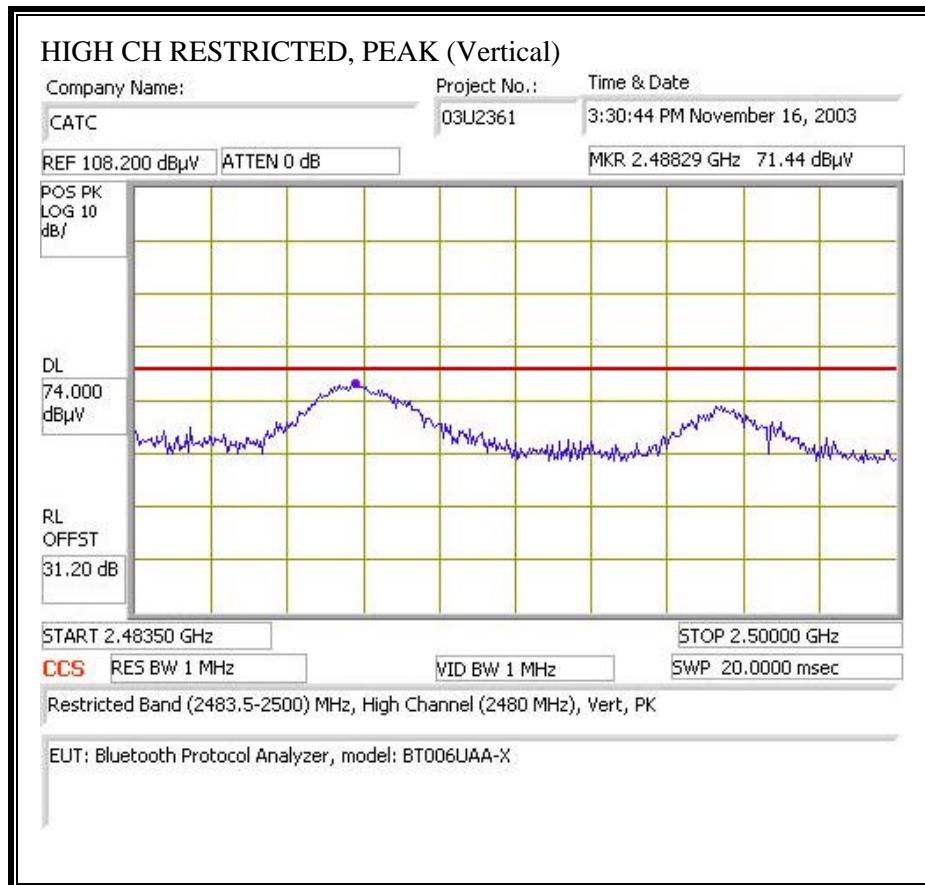
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

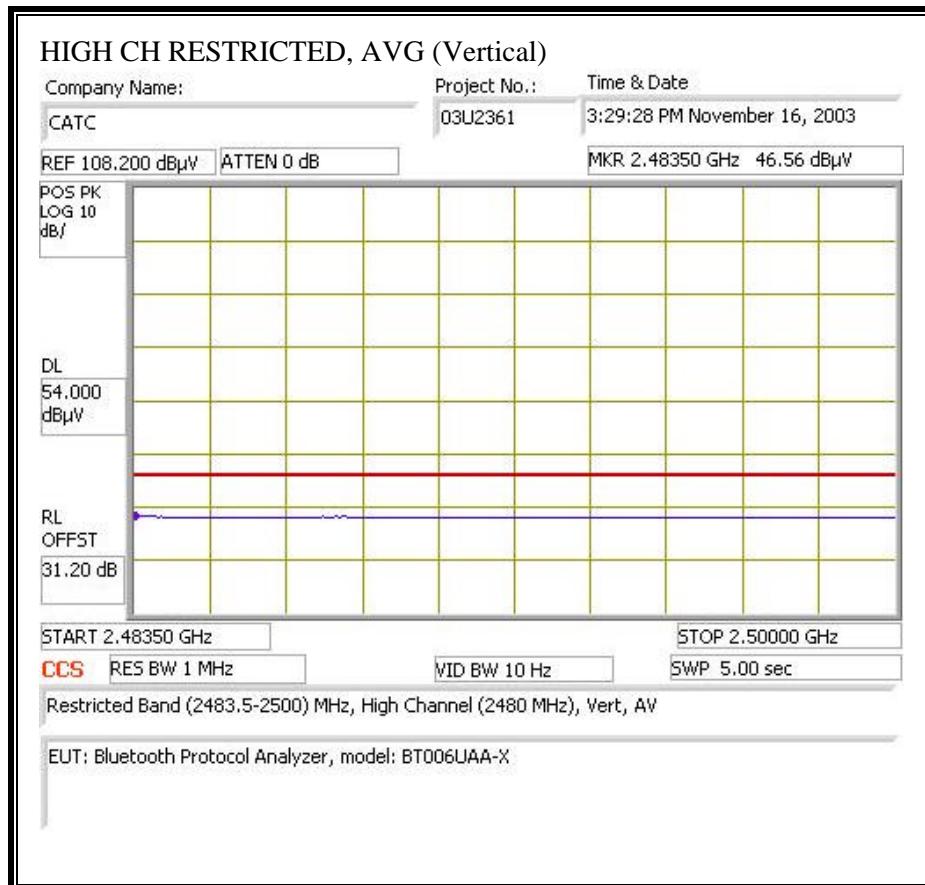




RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL)

11/17/03 High Frequency Measurement Compliance Certification Services, Morgan Hill Open Field Site															
Test Engr:	Frank Ibrahim														
Project #:	03U2361														
Company:	CATC														
EUT Descrip.:	2.4 GHz Bluetooth Protocol Analyzer														
EUT M/N:	BT006UAA-X														
Test Target:	FCC 15.249														
Mode Oper:	TX ON														
Test Equipment:															
EMCO Horn 1-18GHz			Pre-amplifier 1-26GHz			Spectrum Analyzer			Horn >18GHz						
T59; S/N: 3245 @3m			T63 Miteq 646456			HP 8593EM Analyzer			T87; ARA 18-26GHz; S/N:1049						
Hi Frequency Cables															
<input type="checkbox"/> (2 ft) <input type="checkbox"/> (2 ~ 3 ft) <input type="checkbox"/> (4 ~ 6 ft) <input checked="" type="checkbox"/> (12 ft)				Peak Measurements: 1 MHz Resolution Bandwidth 1MHz Video Bandwidth				Average Measurements: 1 MHz Resolution Bandwidth 10Hz Video Bandwidth							
f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
Low Channel (2402 MHz)															
2.402	9.8	65.3	32.8	29.3	1.6	0.0	0.0	0.0	96.2	63.7	114.0	94.0	-17.8	-30.3	V
2.402	9.8	61.1	31.4	29.3	1.6	0.0	0.0	0.0	92.0	62.3	114.0	94.0	-22.0	-31.7	H
Mid Channel (2441 MHz)															
2.441	9.8	67.6	33.5	29.4	1.6	0.0	0.0	0.0	98.6	64.4	114.0	94.0	-15.4	-29.6	V
2.441	9.8	58.0	31.8	29.4	1.6	0.0	0.0	0.0	89.0	62.8	114.0	94.0	-25.0	-31.2	H
High Channel (2480 MHz)															
2.480	9.8	67.8	33.5	29.5	1.6	0.0	0.0	0.0	98.9	64.6	114.0	94.0	-15.1	-29.4	V
2.480	9.8	58.2	30.7	29.5	1.6	0.0	0.0	0.0	89.3	61.8	114.0	94.0	-24.7	-32.2	H
Note: no harmonics or spurious have been found in the freq range of 1GHz to 25GHz for low, mid and high channels															
f Measurement Frequency					Amp	Preamp Gain									
Dist Distance to Antenna					D Corr	Distance Correct to 3 meters									
Read Analyzer Reading					Avg	Average Field Strength @ 3 m									
AF Antenna Factor					Peak	Calculated Peak Field Strength									
CL Cable Loss					HPF	High Pass Filter									
					Avg Lim	Average Field Strength Limit									
					Pk Lim	Peak Field Strength Limit									
					Avg Mar	Margin vs. Average Limit									
					Pk Mar	Margin vs. Peak Limit									

7.1.3. WORST-CASE RADIATED EMISSIONS BELOW 1 GHZ

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION)

 FCC, VCCI, CISPR, CE, AUSTEL, NZ UL, CSA, TÜV, BSMI, DHHS, NVLAP		Project #: 03u2361 Report #: 111903B1 Date & Time: 11/19/03 10:26 AM Test Engr: NEELESH RAJ									
561F MONTEREY ROAD, SAN JOSE, CA 95037-9001 PHONE: (408) 463-0885 FAX: (408) 463-0888											
Company: COMPUTER ACCESS TECHNOLOGY CORP. (CATC)											
EUT Description: 2.4GHz BLUETOOTH PROTOCOL ANALYZER											
Test Configuration: EUT/ACCESSORY											
Type of Test: CLASS B											
Mode of Operation: INQUIRY MODE (TRANSMITTING)											
		<< Main Sheet									
Freq. (MHz)	Reading (dBuV)	AF (dB)	Closs (dB)	Pre-amp (dB)	Level (dBuV/m)	Limit FCC_B	Margin (dB)	Pol (H/V)	Az (Deg)	Height (Meter)	Mark (P/Q/A)
192.00	55.00	9.52	3.46	28.75	39.22	43.50	-4.28	3mV	180.00	1.00	QP
528.08	45.30	18.12	5.79	29.20	40.01	46.00	-5.99	3mV	135.00	1.00	P
312.00	50.60	13.54	4.30	28.44	40.00	46.00	-6.00	3mV	0.00	1.50	P
480.07	45.30	17.37	5.50	29.13	39.04	46.00	-6.96	3mV	180.00	1.00	QP
408.00	47.00	15.80	5.01	28.91	38.90	46.00	-7.10	3mV	180.00	3.00	QP
48.00	49.80	10.36	1.81	29.31	32.66	40.00	-7.34	3mV	0.00	1.00	P
6 Worst Data											

7.2. POWERLINE CONDUCTED EMISSIONS

LIMIT

§15.207 (a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal.

The lower limit applies at the boundary between the frequency ranges.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

The resolution bandwidth is set to 9 kHz for both peak detection and quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

Line conducted data is recorded for both NEUTRAL and HOT lines.

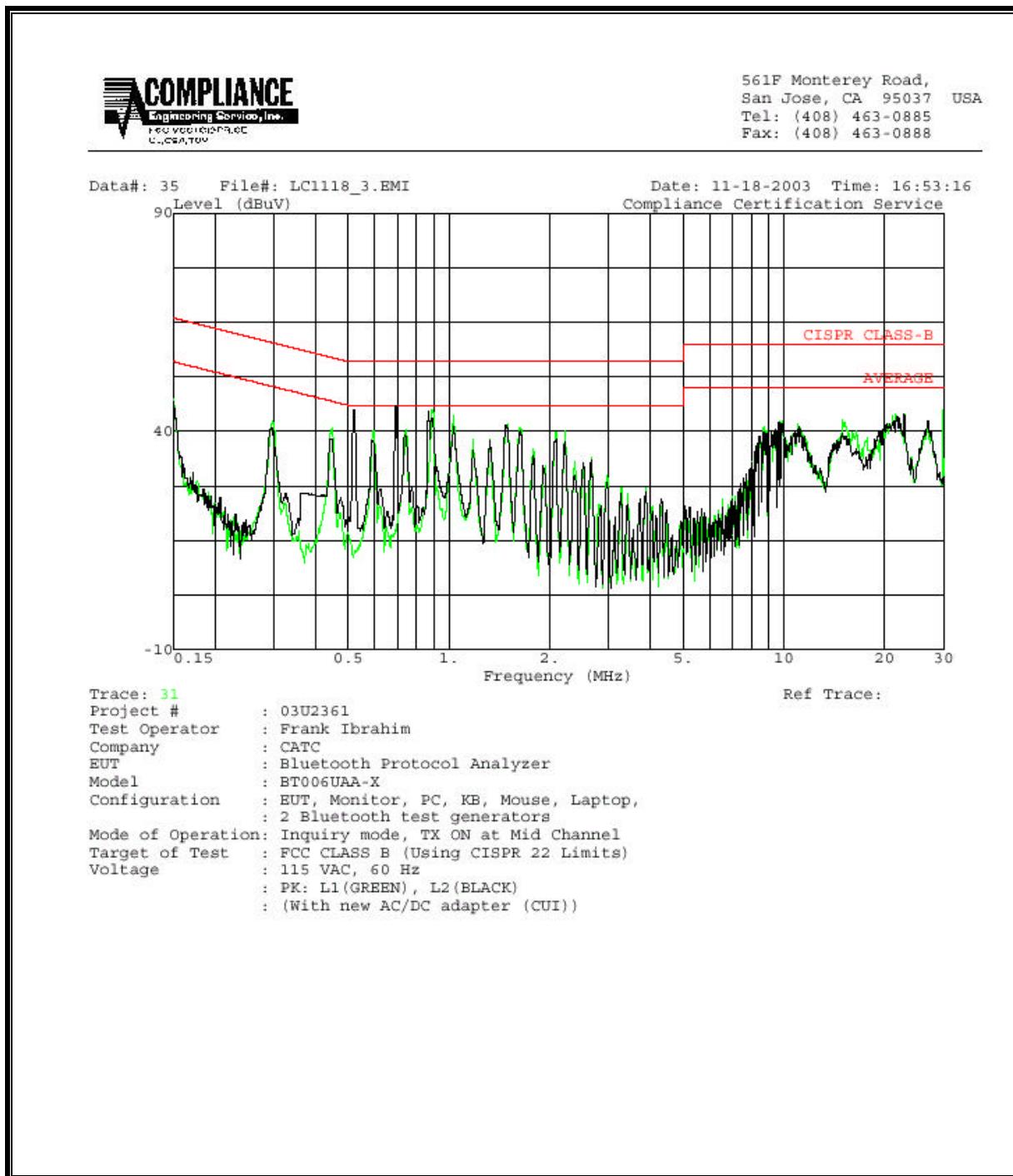
RESULTS

No non-compliance noted:

6 WORST EMISSIONS

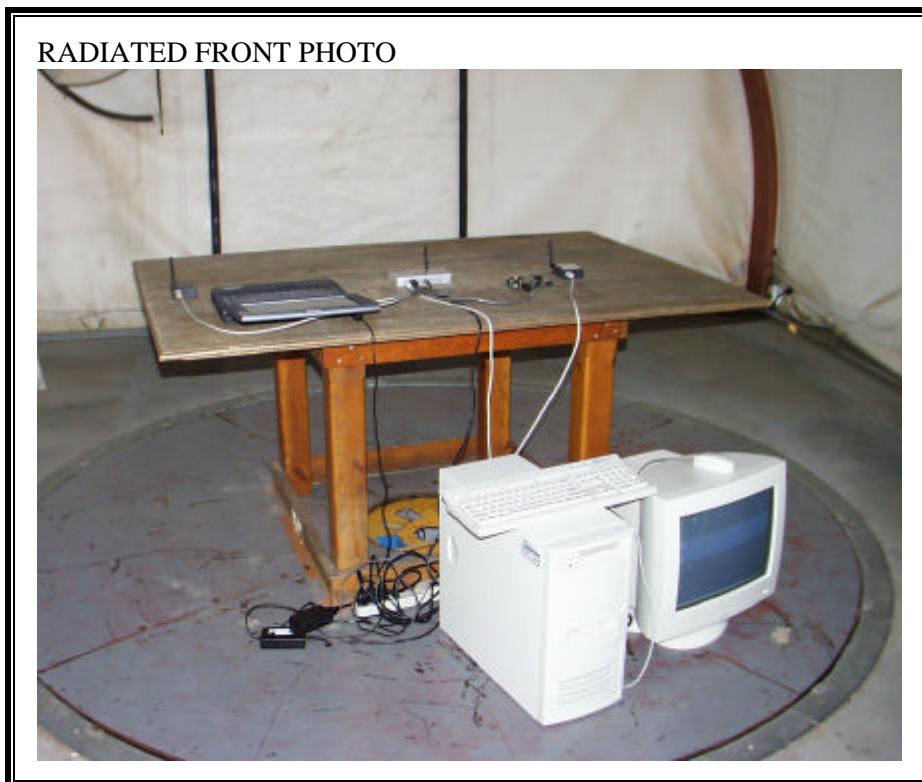
CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq. (MHz)	Reading			Closs (dB)	Limit QP	EN_B AV	Margin		Remark
	PK (dBuV)	QP (dBuV)	AV (dBuV)				QP (dB)	AV (dB)	
0.15	47.42	--	--	0.00	66.00	56.00	-18.58	-8.58	L1
0.89	44.90	--	--	0.00	56.00	46.00	-11.10	-1.10	L1
1.03	43.64	--	--	0.00	56.00	46.00	-12.36	-2.36	L1
0.52	44.64	--	--	0.00	56.00	46.00	-11.36	-1.36	L2
0.69	45.94	--	--	0.00	56.00	46.00	-10.06	-0.06	L2
0.87	44.57	--	--	0.00	56.00	46.00	-11.43	-1.43	L2
6 Worst Data									

With new AC/DC Adapter, CUI, model: EPA-151DA-05

LINE 1 AND LINE 2 RESULTS

8. SETUP PHOTOS

RADIATED RF MEASUREMENT SETUP



RADIATED BACK PHOTO



DIGITAL DEVICE RADIATED EMISSIONS SETUP



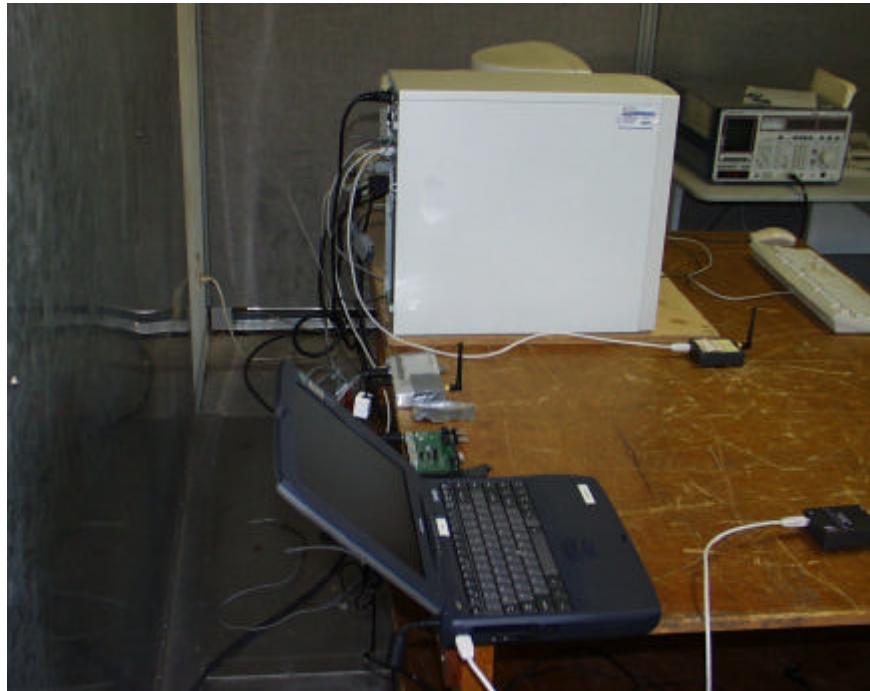
DIGITAL DEVICE BACK PHOTO



POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP



LINE CONDUCTED BACK PHOTO



END OF REPORT